



Sun StorEdge™ N8600 Filer Installation, Configuration, and Service Guide

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Sun StorEdge N8600 Filer Installation, Configuration, and Service Guide

The *Sun StorEdge N8600 Filer Installation, Configuration, and Service Guide* describes how to install, configure, and perform selected troubleshooting procedures with the Sun StorEdge™ N8600 Filer. This document is organized as follows:

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- “Accessing Sun Documentation Online” on page 4
- “Product Overview” on page 5
- “Starting Up the System” on page 8
- “Initial Filer Setup” on page 10
 - “To Set Up the Initial System Configuration” on page 10
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- “Setting Up the Management LAN to Monitor the Arrays” on page 17
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 - “To Configure the Arrays for Monitoring” on page 23
- “Configuration and Monitoring Options” on page 27
 - “Monitoring the Sun Enterprise 4500 Server” on page 27
 - “Configuring the System to Monitor the Arrays” on page 27
 - “Backup Client Support” on page 30
 - “To Enable the Sun Solstice Backup Software” on page 30
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Reference Documentation

Document Title	Part Number
<i>Sun StorEdge N8600 Filer Hardware Setup</i>	816-2035
<i>Sun StorEdge T3 Array Installation, Operations, and Service Manual</i>	806-1062
<i>Sun StorEdge T3 Array Administrator's Guide</i>	806-1063
<i>Sun StorEdge T3 Array Release Notes</i>	806-1497
<i>Sun StorEdge N8400 and N8600 Filer Administrator's Guide</i>	806-6905
<i>VERITAS NetBackup System Administrator's Guide</i>	N/A

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1. Access Sun web site home page on your browser.

`http://www.sun.com`

2. Select Products & Solutions.

3. Under Hardware, select Documentation.

- For Sun StorEdge N8400 and N8600 documentation, sequentially select:
 - Network Storage Solutions
 - Network-Attached Storage (NAS)
- For Sun Enterprise 4500 documentation, sequentially select:
 - Servers
 - Sun Enterprise 6x00/5x00/4x00/3x00
- For Sun StorEdge T3 Array documentation, sequentially select:
 - Network Storage Solutions
 - Disk Arrays
 - Sun StorEdge[tm] T3

Product Overview

A network attached storage (NAS) device is an appliance that supplies disk storage to users over a network. Moving storage from the user's desktop to the network maximizes data availability and security. The Sun StorEdge N8600 Filer (hereafter referred to as "the filer") is a NAS appliance that consists of a Sun Enterprise 4500 Server and one to ten partner groups of Sun StorEdge T3 Arrays. This equates to one to ten terabytes (Tbytes) of storage.

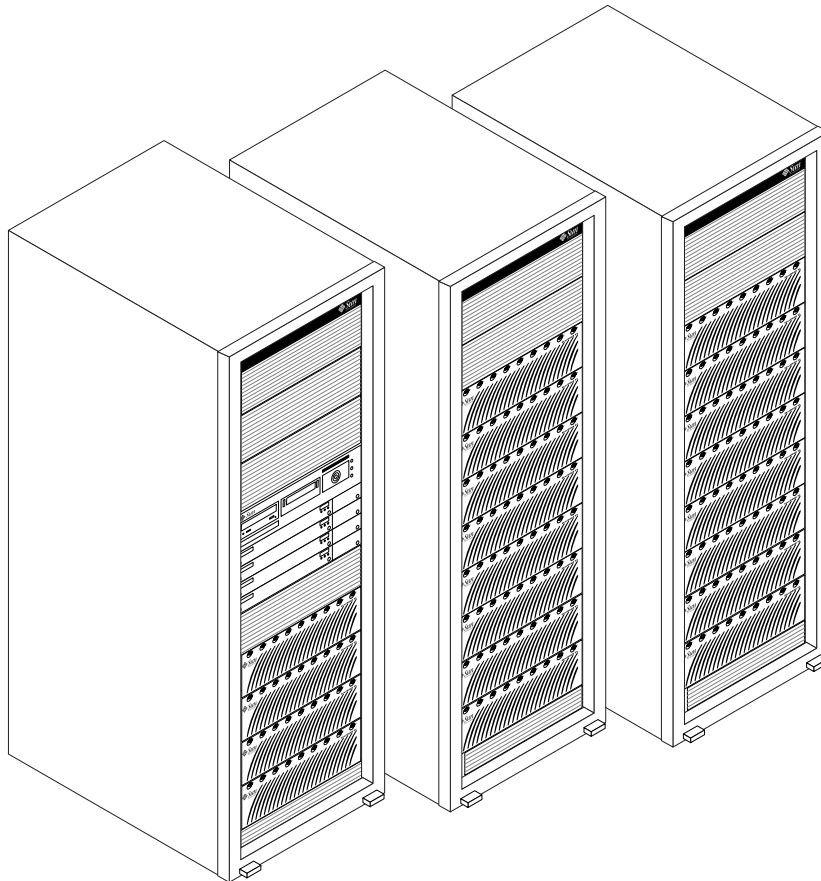


FIGURE 1 Sun StorEdge N8600 Filer with Maximum Storage Configuration

The filer is an integration of proven Sun Microsystems hardware and software to obtain easy access to a maximum of 10 Tbytes of storage. It provides a complete file server solution that seamlessly integrates into your network. The filer scales both vertically and horizontally—you can add more filers to your network, or add more storage to your filer.

The filer contains features that are designed to minimize down time, including:

- Mirrored system disks in the Sun Enterprise 4500 Server
- Hardware redundant array of independent disks (RAID)-5 storage system
- Redundant power supplies in both the Sun Enterprise 4500 Server and each of the Sun StorEdge T3 Arrays

Access to the filer's disk storage is through the following industry standard file access protocols:

- NFS™ file system
- Common Internet File System (CIFS)

The filer includes a web-based administration tool that provides an easy-to-use graphical user interface (GUI).

FIGURE 2 illustrates how a filer can interact in a common network environment.

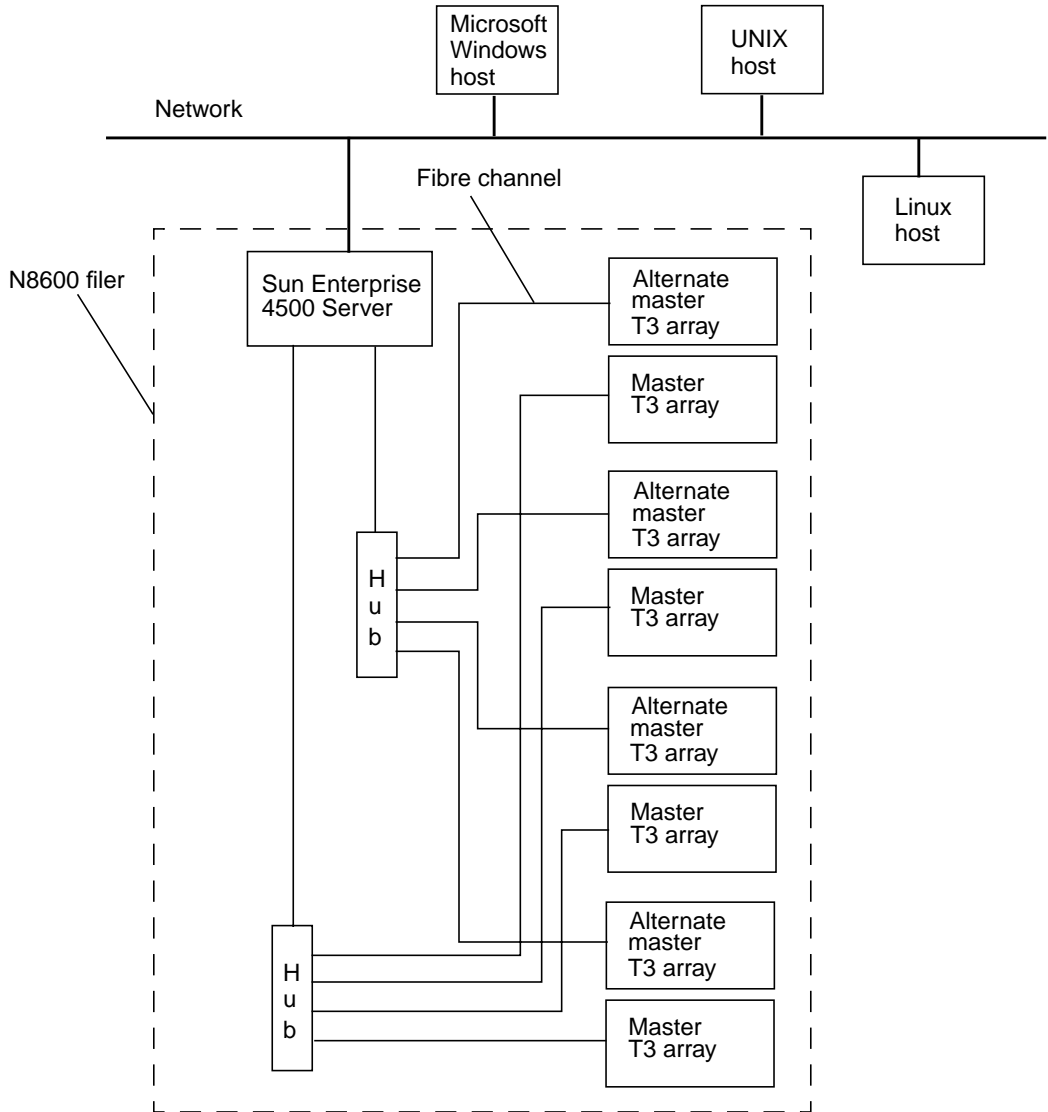


FIGURE 2 Sun StorEdge N8600 Filer System Example

Note – The N8600 filer system storage can be expanded in 1.0-Tbyte increments to a maximum of 10 Tbytes. This is done by adding Sun StorEdge T3 Array partner groups for a maximum of 20 individual arrays. Contact your local Sun sales representative for more information.

Starting Up the System

Note – The order in which the machines are powered on is very important.

▼ To Startup the First Time

1. Refer to *Sun StorEdge N8600 Filer Hardware Setup*.
2. Proceed to “Initial Filer Setup” on page 10.

▼ To Startup After a Facility Power Failure

1. Turn off the power switch on the back of the Sun Enterprise 4500 Server before the facility power comes back on. See FIGURE 3.
2. When the facility power returns, **wait** for every Sun StorEdge T3 Array to fully boot.

Wait approximately eight minutes. If possible, verify that the flashing LEDs on the back panel of the arrays go steady to indicate they are ready.

3. Power on the Sun Enterprise 4500 Server.

The boot process will take up to ten minutes, depending on the components installed.

4. Connect a console to the Sun Enterprise 4500 Server as shown in FIGURE 3.

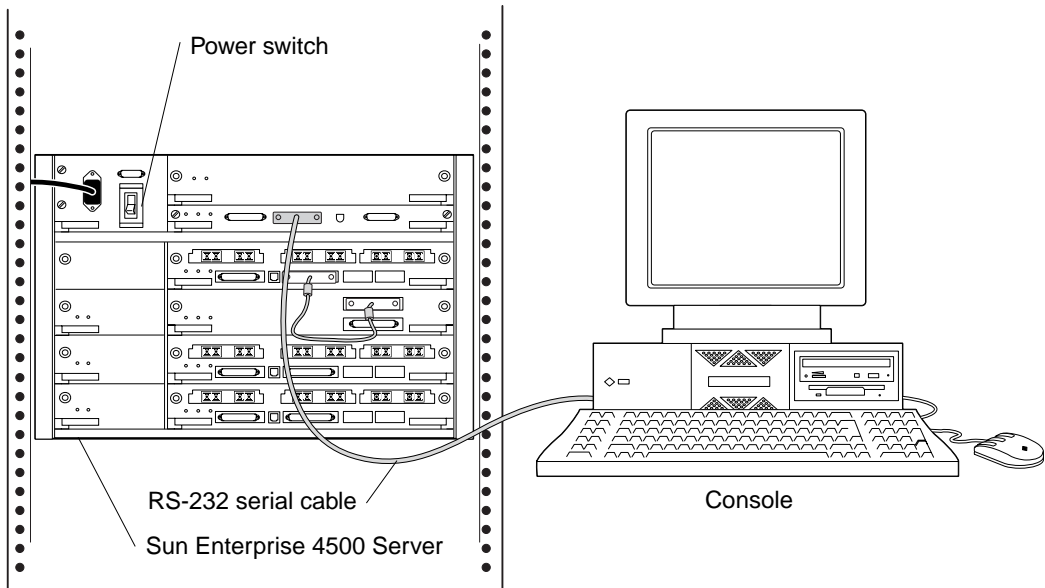


FIGURE 3 Console Connection to Reboot the System

5. Establish communications with the filer.

See Step 1 on page 10 through Step 2 on page 13.

6. Type `reboot`.

Initial Filer Setup

This section includes instructions for configuring the filer hardware. To set up the filer hardware, see *Sun StorEdge N8600 Filer Hardware Setup*. The filer hardware includes at least one partner group of Sun StorEdge T3 Arrays (hereafter referred to as “arrays”), the Sun Enterprise 4500 Server, and the Sun expansion cabinet. This section contains the following topics:

- “To Set Up the Initial System Configuration” on page 10
- “To Configure for PC Network Connectivity” on page 15
- “To Verify the Installation” on page 16

▼ To Set Up the Initial System Configuration

This section describes how to set up and configure the filer to communicate with the network hosts. Before starting this procedure you must be connected to the filer with a console as shown in FIGURE 3.

Note – Before you start this procedure, review Step 4 to identify the required information. See your network administrator.

1. Establish communications with the Sun Enterprise 4500 Server from your console by doing one of the following:

a. For Sun and other UNIX systems, type:

```
# tip -9600 /dev/ttyx
```

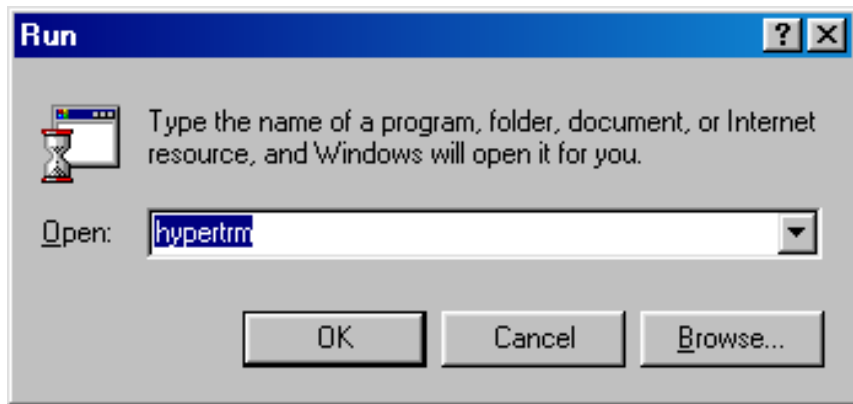
where $x = a$ or b

Go to Step 2 on page 13.

b. For systems using Microsoft Windows™ 95, 98, or NT:

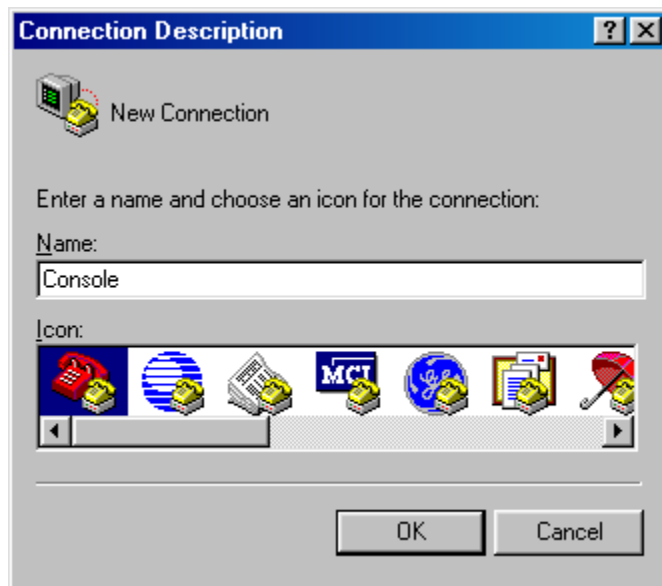
i. Choose: Start → Run.

The Run dialog box is displayed.



ii. Type `Hypertrm`, and click **OK**.

The Connection Description dialog box is displayed.



- iii. Enter a connection name, choose a connection icon, and click OK.
The Connect To dialog box is displayed.



- iv. Choose the Com port that will be used to connect to the filer, and then click on OK.

The COM1 (or COM2) Properties dialog box is displayed.

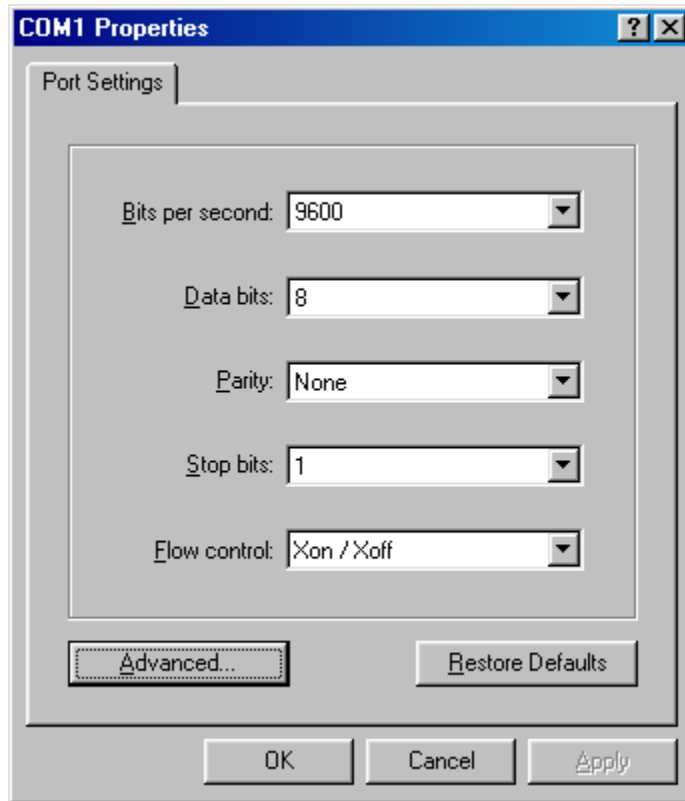


FIGURE 4 Microsoft Windows COM1 Properties Dialog Box

- v. Choose the exact parameters shown in FIGURE 4, and then click OK.

A new window is displayed.

2. Press Enter to obtain the ok prompt.

3. Type boot.

The initial configuration begins.

Note – Before you start Step 4, review the step to identify the required information to obtain from your network administrator.

4. Provide the following information as the system prompts you to set up the initial configuration.

- a. Choose a language. [0 = English] 0
- b. Choose a locale. [0 = English] 0
- c. Choose a terminal type.
[3 = DEC VT100, 12 = XTERM] 3 or 12
- d. Do you have network connectivity. [Yes/No] F2 (Yes)
- e. Is DHCP used? [Yes/No] No
- f. Select the primary network interface. [hme0, qfe0, etc.] hme0
- g. Type the host name. _____, F2
- h. Type the IP address. _____, F2
- i. Is IPv6 used? [Yes/No] No
- j. Confirm the above information. [Yes/No] F2 (Yes)
- k. Is Kerberos security used? [Yes/No] No
- l. Confirm the above information. [Yes/No] F2 (Yes)
- m. Name the service. [NIS, DNS, or none] _____, F2
If NIS or DNS, consult your network administrator to provide:
 - The domain name _____, F2
 - The domain server IP address _____, F2
- n. Confirm the name service information. [Yes/No] F2 (Yes)
- o. Is the system part of a subnet? [Yes/No] F2 (Yes)
- p. Type the netmask. _____, F2
- q. Confirm the time.
 - Region _____, F2
 - Time zone _____, F2
 - Date and time _____, F2
 - Confirm information _____, F2

r. Type and verify the root password. _____, Enter

Note – Make a copy of these settings and store it in a safe place for future reference and disaster recovery.

5. Wait while the system automatically reboots.

When the login prompt appears, indicating the system has successfully booted, disconnect the serial cable from the Sun Enterprise 4500 Server TTY serial port A and the console.

▼ To Configure for PC Network Connectivity

If the filer is connected to a network using the Windows Internet Naming Service (WINS), perform the following steps.



Caution – Perform this procedure before accessing the administration graphical user interface (GUI). If this procedure is used after the administration GUI has been accessed, the procedure may generate error messages that can only be addressed by a Sun Service Engineer.

1. Log on as the “root” user with the password assigned during the initial configuration step r above.

2. Stop CIFS services by typing:

```
# /etc/int.d/ms_srv stop
```

3. Stop NetBIOS services by typing:

```
# /etc/int.d/netbios stop
```

4. Create a `lmhosts` file by typing:

```
# /opt/SUNWlznb/sbin/winsconf -p WINS server name
```

5. Start the NetBIOS driver by typing:

```
# /etc/int.d/netbios start
```

6. Run the joindomain command, type:

```
# /opt/lanman/sbin/joindomain
```

7. Follow the prompts and answer the questions regarding:

- Administrative account name
- Administrative password
- Server name
- Windows domain name

This completes the PC network connectivity.

▼ To Verify the Installation

Verifying the installation consists of creating a new share and accessing it from a remote host. To complete this section, refer to the *Sun StorEdge N8400 and N8600 Filer Administrator's Guide* to perform the following steps:



Caution – Step 1 is mandatory. If you fail to perform this step you will NOT BE ABLE TO CREATE SHARES via the administration GUI and complete the installation verification.

1. **Before using the web-based Filer Administration Tool to create Shares, you must create one or more logical volumes.**

Logical Volumes are created with the `vol` command using the command line interface (CLI) as described in Chapter 4 of the *Sun StorEdge N8400 and N8600 Filer Administrator's Guide*.

2. **Start the Filer Administration Tool.**

Refer to “To Start the Filer Administration Tool.”

3. **Create a new share.**

Refer to “To Add a New Share.”

4. Mount the newly created share from another host using both the NFS and CIFS protocols.

The filer is now installed and ready to run. For instructions on how to use and manage the filer, refer to *Sun StorEdge N8400 and N8600 Filer Administrator's Guide*.

Setting Up the Management LAN to Monitor the Arrays

Arrays are configured in partner groups consisting of a Master Controller Unit (MCU) and an alternate MCU. The MCU is always located below the alternate MCU in a partner group. The MCU Ethernet connections are used to monitor and administer the alternate MCU.

If the MCU fails and the communication between it and the alternate MCU stops, a controller failover takes place and the alternate MCU now assumes the role of the MCU. The new failover MCU takes the IP address and the MAC address from the former MCU and begins to function as the administrator of the partner group. It will also be able to access the former MCU's drives which are still used to store `syslog` information, system configuration information, and the bootcode.

The filer can notify users of array component failures by sending email across a LAN that is hereafter referred to as the “management LAN” (see FIGURE 5). This is not to be confused with the data network (FIGURE 6). The array component failures that can be reported are:

- Disk drives
- Power supplies
- Cooling units
- Batteries
- Controller

The arrays should be connected to the management LAN as shown in FIGURE 5. You are free to select any of a number of hubs available on the open market to serve as the management LAN hub(s).

This section contains the following topics:

- “To Set Up the Partner Group to Communicate with the Management LAN” on page 20
- “To Configure the Arrays for Monitoring” on page 23

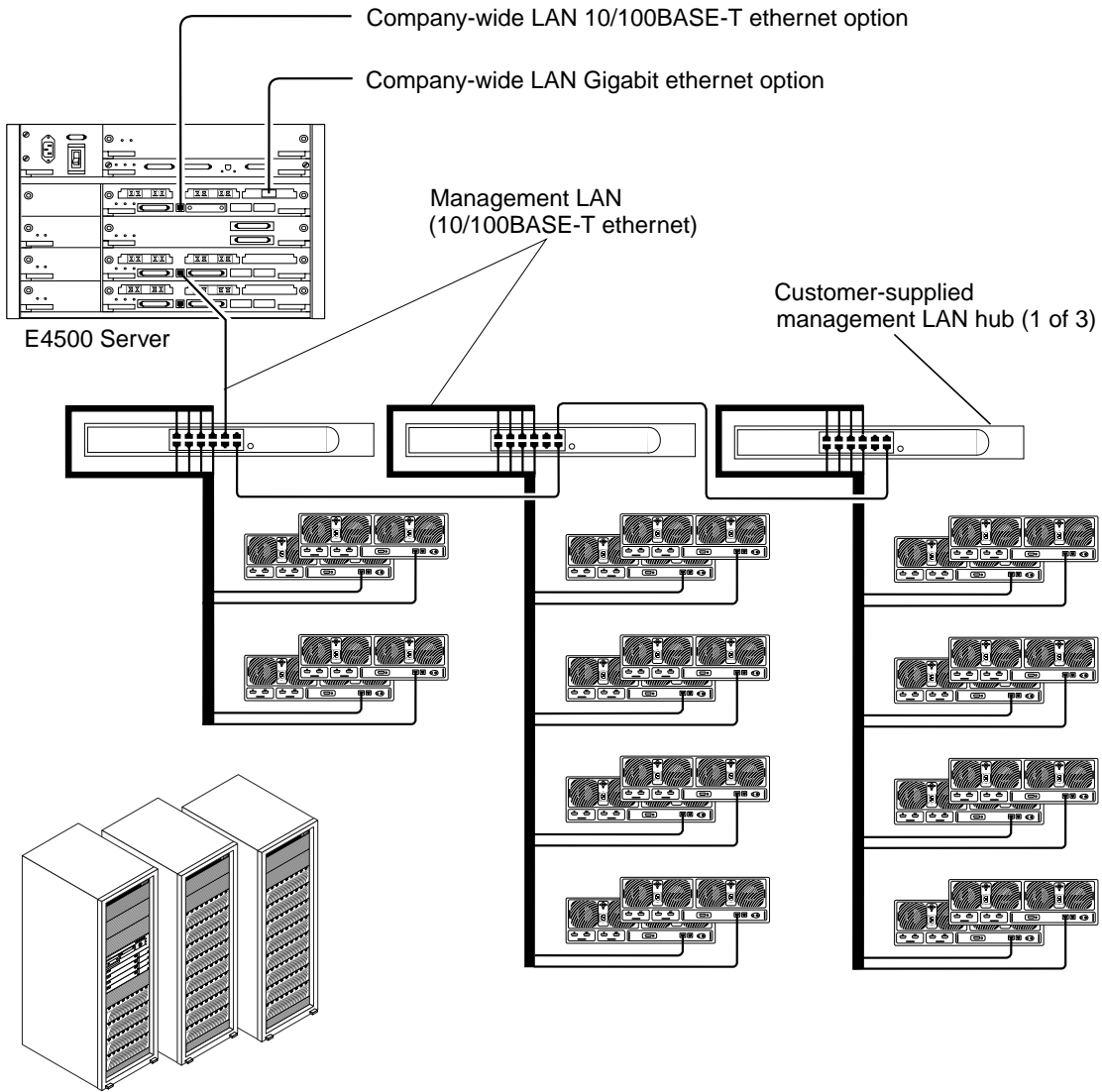
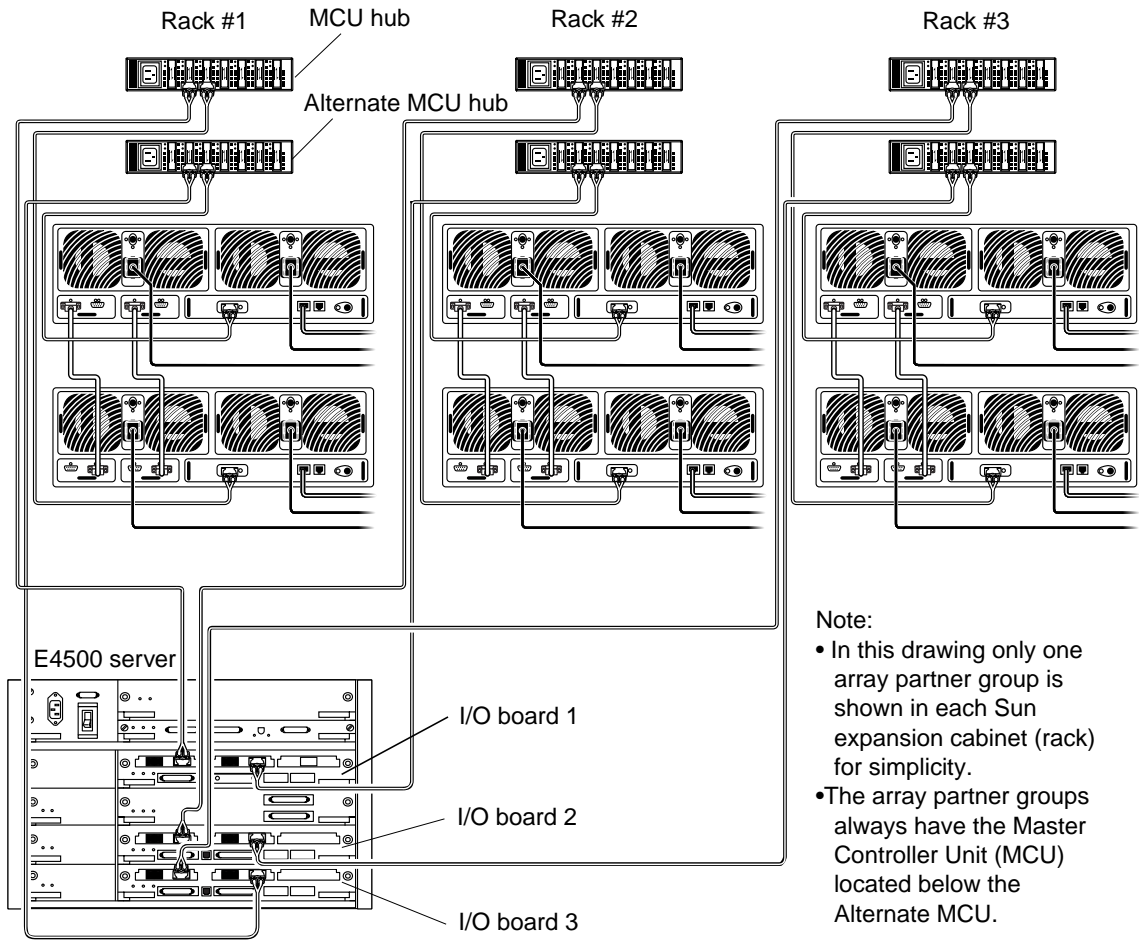


FIGURE 5 Sun StorEdge N8600 Filer Management LAN Configuration



- Note:
- In this drawing only one array partner group is shown in each Sun expansion cabinet (rack) for simplicity.
 - The array partner groups always have the Master Controller Unit (MCU) located below the Alternate MCU.

Note: The data network hubs (MCU and Alternate MCU hubs) are connected to the Sun Enterprise 4500 Server in a fashion that precludes the failure of an I/O board from stopping all communication with the arrays in a single rack.

FIGURE 6 Sun StorEdge N8600 Filer Data Network Configuration

▼ To Set Up the Partner Group to Communicate with the Management LAN

1. Connect a console to the RS-232 serial port (see FIGURE 7) on the back of a Master Controller Unit (MCU).

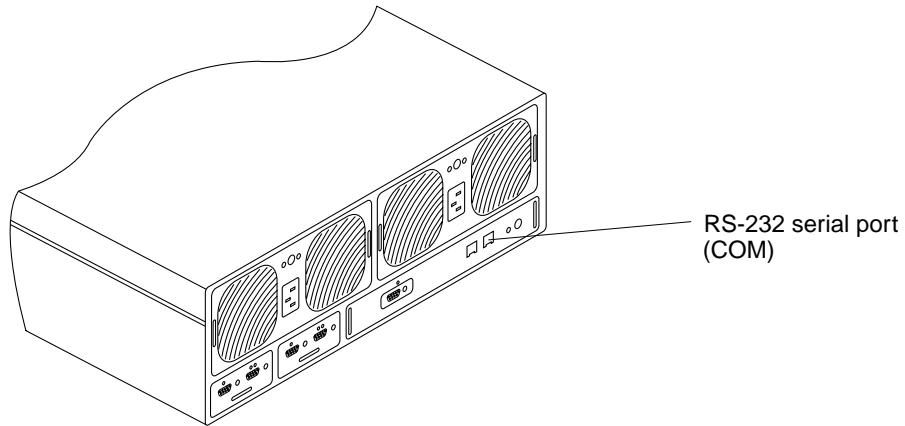


FIGURE 7 Sun StorEdge T3 Array Back Panel

If you use this connection, you can proceed to Step 2 on page 21. As an alternative you can connect to the MCU using either of the following methods:

Tip Server

Connect to the array RS-232 serial port with your tip server. From a separate workstation, open a telnet session to the tip server and select the corresponding port number that represents the array. Proceed to Step 2 on page 21.

Laptop Computer

Connect a standard telephone line with an RJ-3 connector to the array RS-232 serial port. Attach the other end to the appropriate adapter and connect that to the serial port of your laptop PC. Set up a hyperterm connection by performing the following steps.

- a. **Choose: Start → Run.**

The Run dialog box is displayed.

b. Type `hypertm`, and click OK.

The Connection Description dialog box is displayed.

c. Enter a connection name, choose a connection icon, and click OK.

The Connect To dialog box is displayed.

d. Choose the COM port that will be used to connect to the filer, and then click on OK.

The COM1 (or COM2) Properties dialog box is displayed.

e. Choose the following parameters in the COM1 Properties dialog box:

Bits per second: 9600
Data bits: 8
Parity: None
Stop bits: 1
Flow control: Xon/Xoff

Then click OK. A new window is displayed.

f. Press Enter to bring up the array command-line interface (CLI), or the login dialogue box to access the array CLI.

If the login dialogue box appears, enter the username and password.

2. Set up the IP Address using the `set ip` command.

This enables the basic ethernet connectivity to the arrays. For example:

```
# t300name: /:<n> set ip 129.150.47.86
```

Note – <n> = the system-generated command count for each individual session.

3. Set up the gateway address using the `set gateway` command.

This enables you to access an array outside of the subnet. For example:

```
# t300name: /:<n> set gateway 129.150.47.1
```

4. Set the netmask using the `set netmask` command.

The netmask specifies to network mask used to implement IP subnetting. For example:

```
# t300name:::<n> set netmask 255.255.255.0
```

This establishes connectivity for the arrays.

5. Reboot the array by typing the following:

```
# t300name:::<n> sync
# t300name:::<n> reset
Reset the system, are you sure? [N]: Y
```

6. Repeat “To Set Up the Partner Group to Communicate with the Management LAN” on page 20 by connecting to the MCU of each remaining partner group.

This completes the management LAN setup.

▼ To Configure the Arrays for Monitoring

The arrays can now communicate across the management LAN. You must now add the Sun Enterprise 4500 Server IP address into the `syslog.conf` file of both the MCU and the alternate MCU of each partner group.

▼ To Transfer the Array `syslog.conf` File to the Server

1. To enable an ftp connection to the array, set the root password using the `passwd` command.

```
T300name: /: <n> passwd
OLD password: [old] password
NEW password: [new] password
NEW password (confirm): [new] password
```

2. Start an ftp session from the server to the array.

For example:

```
# ftp 192.148.226.11
Connected to 192.148.226.11.
220 server-name FTP server (SunOS 5.8) ready.
Name (192.148.226.11:root):
```

3. Log on to the array by typing `root` and then your password at the prompts.

```
Name (192.148.226.11:root): root

331 Password required for root.
Password: password
230 User root logged in.
ftp>
```

4. Access the `/etc` array directory using the `cd` command.

```
ftp> cd /etc
250 CWD command successful.
ftp>
```

5. Access your working directory on the server using the `lcd` command.

```
ftp> lcd /tmp
Local directory now/tmp
ftp>
```

6. Type `binary` to set the transfer mode.

7. Copy the `syslog.conf` file from the `/etc` directory on the array to your working directory using the `get` command.

```
ftp> get syslog.conf
200 PORT command successful.
150 ASCII data connection for syslog.conf (192.148.226.11.34511)
226 ASCII transfer complete.
local: syslog.conf remote: syslog.conf
20 bytes received in 0.0021 seconds (94.81 Kbytes/s)
ftp>
```

8. Exit the ftp session using the `bye` command.

```
ftp> bye
221 Goodbye.
#
```

▼ To Edit the Array `/etc/syslog.conf` File

Edit the `/etc/syslog.conf` file to allow system messages to be forwarded to the appropriate log files on the server. Provide the IP address of the server similar to the following example.



Caution – Use tabs to separate field entries when editing the `/etc/syslog.conf` file. If tabs are not used, any edits will not be recognized by the array.

```
*.info          @192.148.226.11
```

where `192.148.226.11` is the IP address assigned to the server during its initial configuration.

This allows for Info, Notice, Warning, and Error messages to be passed from the array to the server.

▼ To Transfer the `/etc/syslog.conf` File Back to the Array

1. Start an ftp session from the server to the array.

For example:

```
# ftp 192.148.226.2
Connected to 192.148.226.2
220 server-name FTP server (SunOS 5.8) ready.
Name (192.148.226.2:root):
```

2. Log on to the array by typing `root` and then your password at the prompts.

```
Name (192.148.226.2:root): root

331 Password required for root.
Password: password
230 User root logged in.
ftp>
```

3. Access the `/etc` array directory using the `cd` command.

```
ftp> cd /etc
250 CWD command successful.
ftp>
```

4. Access your working directory on the server where the newly created `syslog.conf` file exists using the `lcd` command.

```
ftp> lcd /tmp
Local directory now/tmp
ftp>
```

5. Type `binary` to set the transfer mode.

6. Copy the `syslog.conf` file from your working directory to the `/etc` directory on the array using the `put` command.

```
ftp> put syslog.conf
200 PORT command successful.
150 ASCII data connection for syslog.conf (192.148.226.11.34511)
226 ASCII transfer complete.
local: syslog.conf remote: syslog.conf
20 bytes received in 0.0021 seconds (94.81 Kbytes/s)
ftp>
```

7. Exit the ftp session using the `bye` command.

```
ftp> bye
221 Goodbye.
#
```

8. Access the array by either a telnet session or a serial connection.

9. Reboot the array by typing the following:

```
t300:/etc:<n> sync
t300:/etc:<n> reset
Reset the system, are you sure? [N]: Y
```

10. Repeat “To Configure the Arrays for Monitoring” on page 23 for both arrays of each remaining partner group.

This completes setting up the arrays for monitoring.

Configuration and Monitoring Options

Configuration of some of the filer's features require specific knowledge of the environment in which it will be operating. As such, various configuration steps must be completed to enable these features.

There are two primary configuration options for setting up the filer on the network. You can increase the sensitivity of the system to detecting component failures and upgrade the backup client support. This section contains the following topics:

- “Monitoring the Sun Enterprise 4500 Server” on page 27
- “Configuring the System to Monitor the Arrays” on page 27
- “Backup Client Support” on page 30
- “To Enable the Sun Solstice Backup Software” on page 30
- “To Install the VERITAS NetBackup Software” on page 30

Monitoring the Sun Enterprise 4500 Server

Monitoring the Sun Enterprise 4500 Server requires system-specific agents that are not part of the filer package. These agents are available as part of:

- Sun Domain Manager (formerly known as SunNet Manager™)
- Sun Management Center (formerly known as SyMon)

Configuring the System to Monitor the Arrays

You can monitor the arrays remotely by using any of the following tools that are supplied with the filer:

- Simple Network Management Protocol (SNMP) notification
- Syslog error reporting
- Array command-line interface (CLI) via a telnet session

Note – Do not confuse the array CLI with the filer CLI. The filer CLI is used to access a simplified set of commands to manage the system.

You can also monitor the arrays remotely by using any of the following tools. Contact your local Sun sales representative for implementation support.

- Sun Management Center (SunMC)
- Sun Remote Services (SRS)

SNMP Notification

SNMP notification directs the software to send remote notification of array events to the administrator's host by using SNMP traps. An SNMP trap is a user datagram protocol (UDP, a protocol that converts data messages generated by the system into data packets) that is sent to a set of hosts that are identified by their IP addresses. The contents of the trap message include header information that identifies the type of trap and the data associated with the trap message.

When an event occurs in the array that requires attention, a trap is asynchronously sent to the administrator's host to report the event. The host(s) to which the trap is sent is configured by the user. The host software that receives the trap is an SNMP management package.

The arrays use the `/etc/syslog.conf` file to trigger the SNMP trap. This file contains four levels of error warning for the administrator's attention. Refer to *Sun StorEdge T3 Array Administrator's Guide* for instructions on how to set up SNMP notification.

An SNMP Management Information Base (MIB, the variables stored by an SNMP agent) file is provided with the array for use with SNMP-based applications. The MIB file is located in the following array directory:

```
/web/snmp/t300.mib
```

To use this file, copy the MIB file from the array to your SNMP management host and refer to your specific SNMP management documentation for the correct MIB file installation procedures.

Syslog Error Reporting

A syslog daemon is a background utility function that is activated to report specified system conditions. The hardware RAID controller contains a syslog daemon that reports system messages and provides for remote monitoring. There are four possible levels of system messages.

- **Error.** Indicates a critical system event that requires immediate user attention. An example would be an over-temperature condition.
- **Warning.** Indicates a system event that will eventually require user attention. An example would be a disabled FRU with a recovery procedure being executed.
- **Notice.** Indicates a system event that might be a side effect of other events or possibly a normal condition. An example would be a power switch in the off position.
- **Information.** Indicates a system event that has no effect on the health of the system. An example would be the reporting of the healthy state of a FRU.

You can configure syslog error reporting to consist of any combination of the levels of messages. Refer to *Sun StorEdge T3 Array Administrator's Guide* for instructions on how to configure syslog error reporting.

Array Command-Line Interface (CLI)

The array CLI is a telnet session to the arrays, usually as “root,” and using the arrays' unique commands for configuration settings and troubleshooting. Examples of these commands are: `vol`, `sys`, and `fru` (these commands have different functions than those of the filer CLI). You can use the array CLI to configure the arrays for:

- Remote system logging
- SNMP notification

Refer to *Sun StorEdge T3 Array Administrator's Guide*.

Note – Do not confuse the array CLI with the filer CLI. The filer CLI is used to access a simplified set of commands to manage the system.

Sun Management Center (SunMC)

To configure the system to be able to monitor the arrays with the use of SunMC, refer to <http://www.sun.com/symon>.

Sun Remote Services (SRS)

To configure the system to be able to monitor the arrays with the use of SRS, refer to <http://www.sun.com/srs>.

Backup Client Support

The filer supports two backup products by default:

- Sun Solstice Backup™ software
- VERITAS NetBackup™ software

▼ To Enable the Sun Solstice Backup Software

1. Establish a telnet connection to the filer.

- On a PC, choose Start → Run, and type `telnet hostname`.
- On Solaris systems, type `telnet hostname` in the terminal window.

Where *hostname* is the host name of the filer.

The log in prompt appears.

2. Type `root`.

3. Type the root password.

4. Type:

```
# /opt/SUNWsfadm/scripts/backup_cfg.sh
```

5. Answer the questions and follow the instructions.

▼ To Install the VERITAS NetBackup Software

- Follow the instructions in the *VERITAS NetBackup System Administrator's Guide*, “Adding Clients” section, to download and configure the client software.

Installation Troubleshooting

This section provides information and troubleshooting procedures to help resolve problems that might occur during the installation. For additional troubleshooting, contact your Sun service provider. This section contains the following topics:

Note – To access all the filer command-line interface (CLI) commands required for troubleshooting, you must be logged in as the `root` user.

- “Explanation of Array Hot Spare Operation” on page 31
- “Troubleshooting System Problems” on page 32
 - “No Indication of a Console Connection Is Provided” on page 32
 - “Cannot Ping the Filer on the Network” on page 33
 - “Cannot Ping the Array on the Network” on page 34
 - “The Web Browser Displays the Message: The requested item could not be loaded by the proxy” on page 35
- “Troubleshooting Array Problems” on page 35
 - “A Disk Drive Fails” on page 35
 - “You Cannot Access Data on an Array and its Controller Card LED Blinks Amber” on page 38

Explanation of Array Hot Spare Operation

A hot spare is an extra data disk used in the event of a failure of one of the data disks in an array. If a data disk in an array fails, the unit enters a degraded mode until all of the data on the failed disk is re-created on the hot spare. This process typically takes between one and two hours. The hot spare disk in the array is in the right-most drive slot (disk 9) if you look at the array from the front.

If a data disk fails, the hot spare becomes active. If the active hot spare fails, the failure can be reported in four ways:

- A host-generated message, found in the `/var/adm/messages` file, indicates a problem with the host-channel connection to the array or a drive failure in the array. Syslog error reports might also be generated.
- A telnet session that monitors the array for its status
- An Simple Network Management Protocol (SNMP) trap message is sent
- A visual indication of a data disk failure by a slow-blinking amber LED on the front of the array above an individual disk drive

If an inactive hot spare fails, the only way to detect the failure is to issue a `healthchk` command from the console.

The procedure for replacing a hot spare is identical to the procedure for replacing a data disk. Refer to “A Disk Drive Fails” on page 35.

Troubleshooting System Problems

No Indication of a Console Connection Is Provided

The `ok` prompt is not displayed and there is no output.

1. Ensure that you are using the correct cables.

Are you using the NULL modem cable that comes with the filer in the TTY serial port A (see FIGURE 8) on the back of the Sun Enterprise 4500 Server?

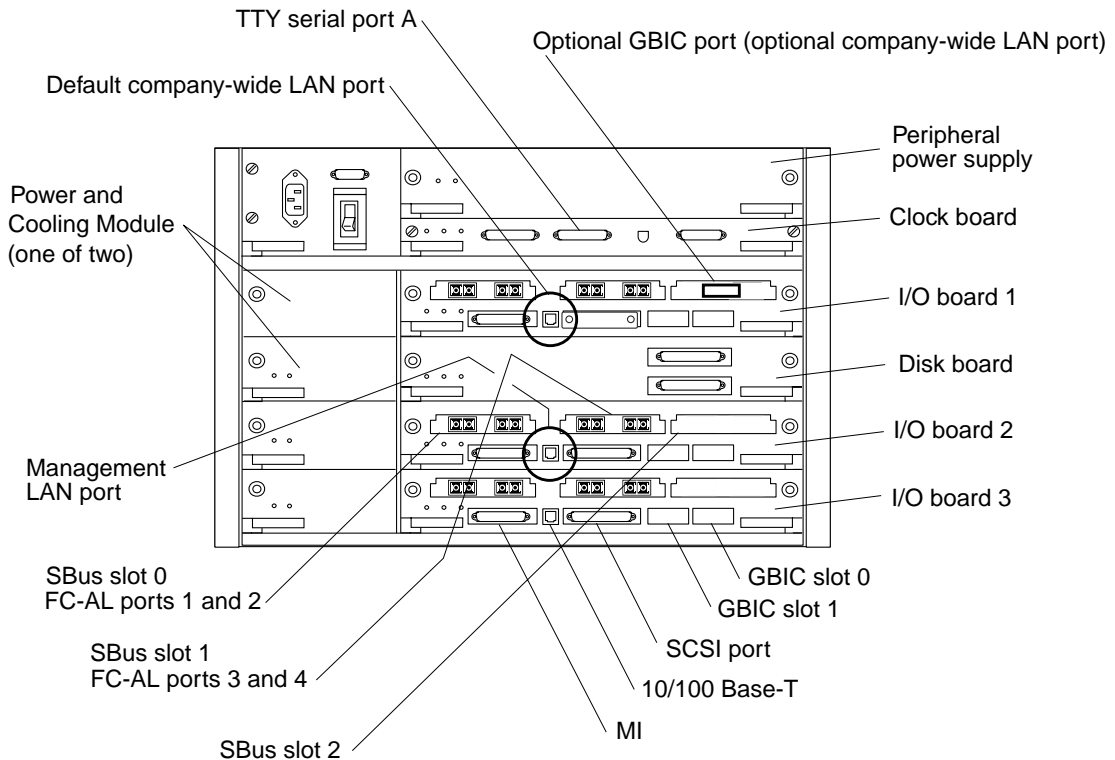


FIGURE 8 Sun Enterprise 4500 Server Rear Details and Connections

2. Check Step 4 on page 14 again for the proper system configuration settings.

Cannot Ping the Filer on the Network

1. Check to make sure you can ping other hosts on the network.
2. Verify the filer network cable is properly connected.
3. Check the network with the console connection.

- a. Connect the serial cable to the filer.

- b. Log in as a root user.

If no login prompt is displayed, go to “No Indication of a Console Connection Is Provided” on page 32.

- c. Try to ping another host on the network.

If you can ping another host, a problem exists with the network. Contact the system administrator.

- d. Check to see if the filer can see traffic on the network by typing:

```
# snoop -d interface
```

Where *interface* is the name of the network interface device being used. Some examples are hme0, hme1, qfe0, qfe1, ge0, and ge2.

If nothing is displayed on the screen, verify again that the cable connections are correct.

Note – No indicated traffic means that the interface is not connected to the network.

- e. Type:

```
# ifconfig -a
```

The output should look something like the following.

```
lo0: flags=849<UP,LOOPBACK.RUNNING, MULTICAST>mtu 8232
    inet 127.0.0.1 netmask ff000000
hme0: flags=863<UP,BROADCAST,NOTRAILERS, RUNNING, MULTICAST>
    mtu 1500 inet 192.1.1.1 netmask ffffffff broadcast 192.1.1.255
```

f. Verify that the following settings are correct:

- IP address
- Broadcast address
- Flags

g. If any setting is incorrect, perform the following steps:

i. Type:

```
# vi /etc/hosts
```

ii. Search the file to locate the filer IP address, which should be immediately below the local host IP address.

```
127.0.7.1 localhost name  
192.130.151.22 filename loghost name
```

iii. Correct the *filename* IP address.

iv. Reboot by typing:

```
# init 6
```

The broadcast address and interface flags are automatically corrected.

4. If the problem persists, contact your local Sun service provider.

Cannot Ping the Array on the Network

1. Check to make sure you can ping other hosts on the network.

2. Verify that you have set the correct array hostname and IP address.

Check to ensure that the hostname or IP address is located in the `/etc/hosts` file.

3. Check the integrity of the cable connections.

4. If the problem persists, contact your local Sun service provider.

The Web Browser Displays the Message: The requested item could not be loaded by the proxy

1. Make sure that the URL address requested is correct and complete (IP address:port).
2. Verify that the web server software is running by establishing a telnet connection to the filer from another host and typing:

```
# ps -ef|grep httpd
```

An output similar to the following should be displayed.

```
# nobody 4298 4296 0 Apr 24 ?        0:00 /usr/apache/bin/http
# nobody 4306 4296 0 Apr 24 ?        0:00 /usr/apache/bin/http
#  root  4296      1 0 Apr 24 ?        0:00 /usr/apache/bin/http
# nobody 4302 4296 0 Apr 24 ?        0:00 /usr/apache/bin/http
# nobody 4301 4296 0 Apr 24 ?        0:00 /usr/apache/bin/http
# nobody 4300 4296 0 Apr 24 ?        0:00 /usr/apache/bin/http
# nobody 4299 4296 0 Apr 24 ?        0:00 /usr/apache/bin/http
```

- If the http processes are not displayed, contact your local Sun service provider.
- If the http processes are displayed and the problem persists, carefully verify the URL address again.

Troubleshooting Array Problems

A Disk Drive Fails

This failure can be reported in the following ways:

- A host-generated message, found in the `/var/adm/messages` file, indicates a problem with the host-channel connection to the array or a drive failure in the array. Syslog error reports might also be generated.
- A telnet session that monitors the array for its status
- A Simple Network Management Protocol (SNMP) trap message is sent
- A visual indication of a data disk failure by a slow-blinking amber LED on the front of the array above an individual disk drive

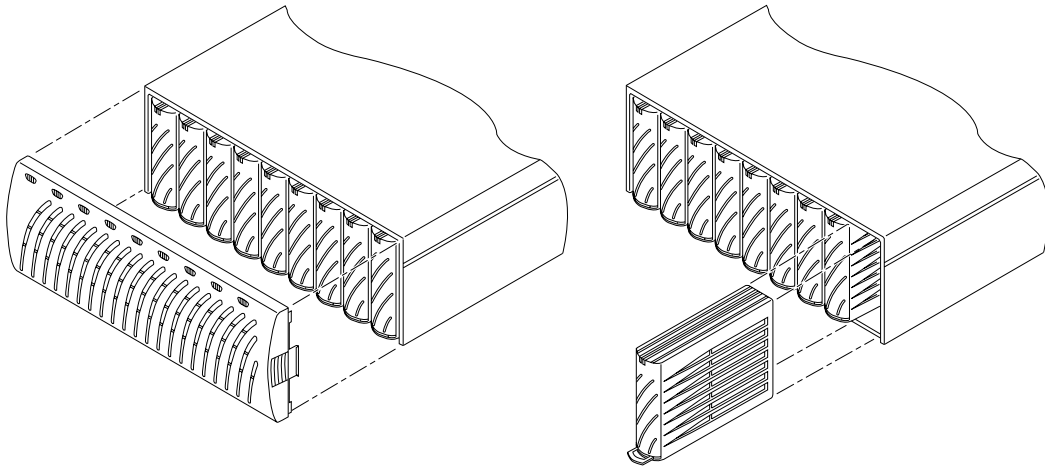


FIGURE 9 Removing an Array Front Panel and a Disk Drive

Note – When a slow-blinking amber LED indicates a drive failure, always verify the field replaceable unit (FRU) status using the array command-line interface (CLI) before replacing the drive. Do not confuse the array CLI with the filer CLI. The filer CLI is used to access a simplified set of commands to manage the system.

- **Replace the disk drive by following the instructions in *Sun StorEdge T3 Array Installation, Operation, and Service Manual*.**

Note – Upon removing a disk drive from a powered-on array, you will have 30 minutes to install a new drive, or the array will automatically power-off.

Note – Replace only one disk drive in an array at a time to ensure that no data is lost. Complete any volume reconstructions and ensure that the disk drive is fully functional before replacing another disk drive in the same array.

The default configuration of the arrays is to automatically spin up and re-enable a replaced disk drive, then automatically reconstruct the data from the parity or hot spare disk drives. Disk drive spinup takes about 30 seconds. Reconstruction of the data on the disk drive can take up to one hour, depending on system activity.

Note – In some cases, if a disk drive is removed and replaced on a powered-off or incompletely booted array, the internal system monitoring facilities may not correctly detect the drive replacement. Therefore, always replace disk drives on powered-on, fully booted arrays only.

For more information refer to:

- *Sun StorEdge T3 Array Installation, Operations, and Service Manual*
- *Sun StorEdge T3 Array Administrator's Guide*

▼ To Verify Drive Reconstruction

To check the status of a drive and verify the reconstruction of the data, choose one of the two following methods:

- **Visual.** When you place the new drive into the array, the following sequence should take place:
 - Disk drive amber LED blinks fast. Disk is spinning up.
 - Disk drive green and amber LEDs blink fast. Disk is being initialized.
 - Disk drive green LED blinks fast and amber LED is steady. Disk is being reconstructed.
 - Disk drive green LED is steady. Done.
- **Telnet.** Start a telnet session to the array and use the `proc list` command via the array's command-line interface (CLI).

```
t300:/:<35> proc list
```

Note – Do not confuse the array CLI with the filer CLI. The filer CLI is used to access a simplified set of commands to manage the system.

An output similar to the following should be displayed.

VOLUME	CMD_REF	PERCENT	TIME	COMMAND
v1	20241	23	0.09	vol recon

You Cannot Access Data on an Array and its Controller Card LED Blinks Amber

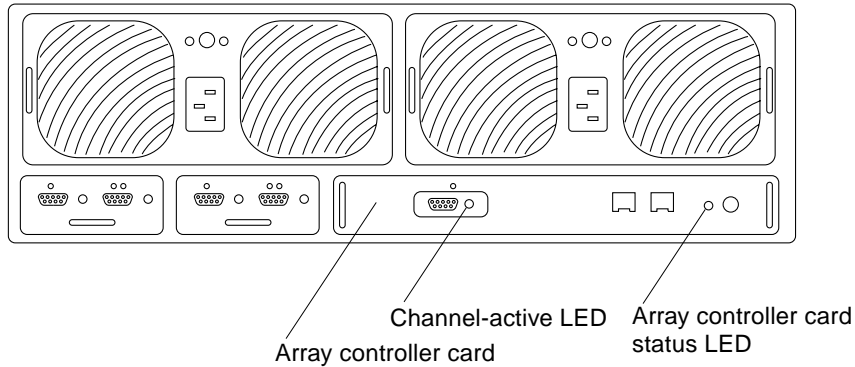


FIGURE 10 Back of Sun StorEdge T3 Array

This can be due to two possible causes:

- The fiber-optic cable of the Sun StorEdge N8400 Filer is loose.
- The array controller card has failed. The controller card status LED blinks amber. If this happens, the data on the disks is still intact, but you must replace the controller card. See TABLE 1 and TABLE 2 for an explanation of the controller card LEDs.

TABLE 1 Channel-Active LED Descriptions

Channel Active LED (green)	Description
Off	<ul style="list-style-type: none"> • Port disabled
Solid	<ul style="list-style-type: none"> • Port enabled, idle
Blinking	<ul style="list-style-type: none"> • Port enabled, activity

TABLE 2 Controller Status LED Descriptions

Controller Status LED (green or amber)	Description
Off	<ul style="list-style-type: none">• Controller not installed (not recognized)
Green	<ul style="list-style-type: none">• Controller OK
Amber	<ul style="list-style-type: none">• Controller boot/shutdown/firmware download in progress
Blinking amber	<ul style="list-style-type: none">• Controller failure; OK to replace controller

Note—Verify a controller card failure using the array CLI.

- **Replace the controller card using the instructions in *Sun StorEdge T3 Array Installation, Operation, and Service Manual*.**

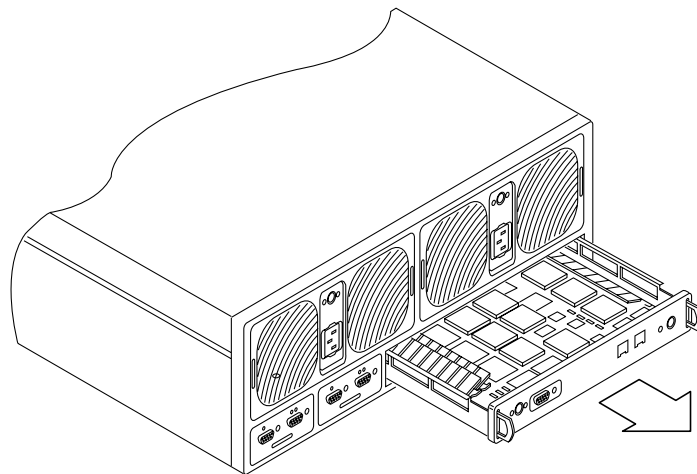


FIGURE 11 Removing the Sun StorEdge T3 Controller Card

You do not have to reconfigure the new controller.

